

Tunable lithium niobate photonic crystals: Simulation - Fabrication - Optical Characterization

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Lithium niobate is a very attractive material because of its many different physical properties (acousto-optical and electro-optical effects, piezoelectricity). We have already fabricated [1] and optically characterized lithium niobate photonic crystals showing the existence of a full photonic band gap (PBG).

In this work, we have chosen the electro-optical effect to realize a tunable photonic crystal device. In order to achieve the most sensitive photonic crystal configuration for the electro-optical effect in lithium niobate, we have performed numerical simulations based on the FDTD (finite difference time domain) method. The structure to be modelled is a 2-dimensional lattice of circular apertures, where different defect geometries have been studied.

In addition the fabrication and optical characterization of the previously simulated device will be presented.

[1] F. Lacour, N. Courjal, M.-P. Bernal, A. Sabac, C. Bainier and M. Spajer, **Optical Materials**, to appear (2005).

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